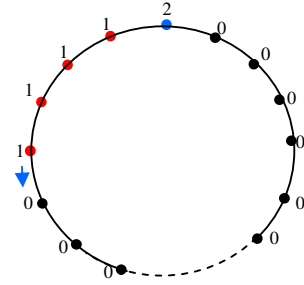
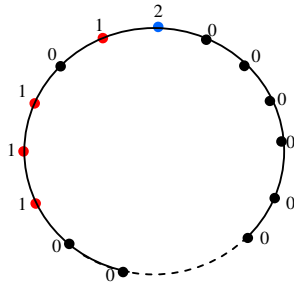
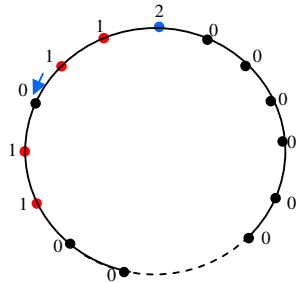
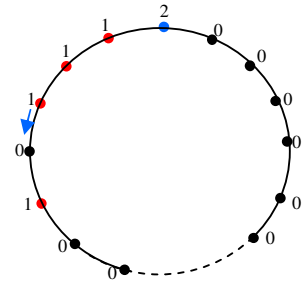


Teorem: 1 tane özdeş mavi, 4 tane özdeş kırmızı ve n tane özdeş siyah boncuklar ile yapılacak bilekliklerin sayısı $F(1,4,n)$ ise

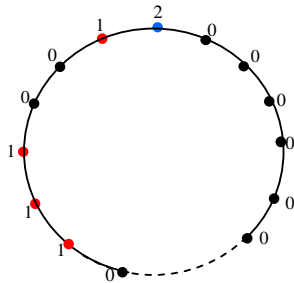
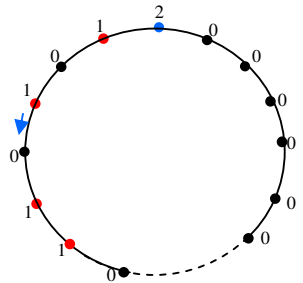
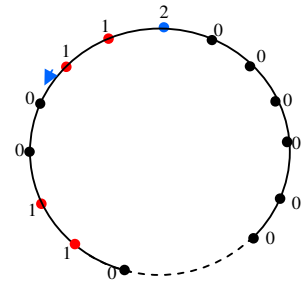
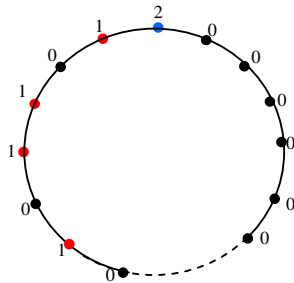
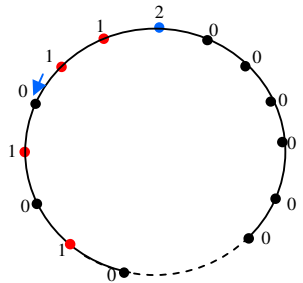
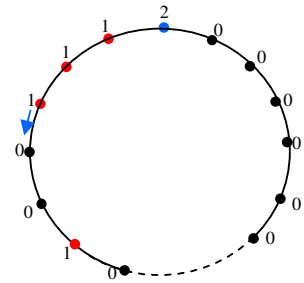
$$F(1,4,n) = \frac{n.(n+1).(n+2)}{6} + F(1,2,n) + F(1,4,n-2) \text{ dir.}$$



1 durum. Başlangıçtaki 1'i hareket ettirip arkadan gelen 1'leri yanına çekerek genel durumu oluşturmaya çalışalım.



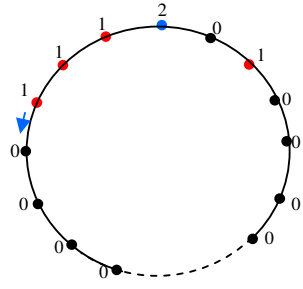
$1 + \{1+1\} = 3$
tane durum
vardır.



$1 + \{1+1\} + \{1+2\} = 6$
Tane durum
vardır.

Benzer olarak 1'in 3 birimlik hareketine karşı $1 + \{1+1\} + \{1+2\} + \{1+3\} = 10$ tane durum vardır.

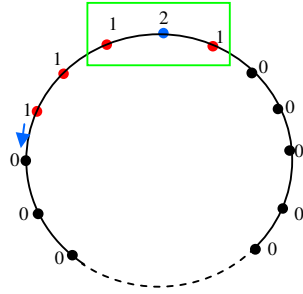
Benzer olarak devam edilirse;



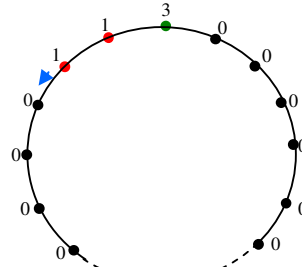
$1 + \{1+1\} + \{1+2\} + \{1+3\} + \dots + \{1+(n-1)\} = \frac{n.(n+1)}{2}$ tane durum vardır.

Elde ettiğimiz bütün durumların toplamını:

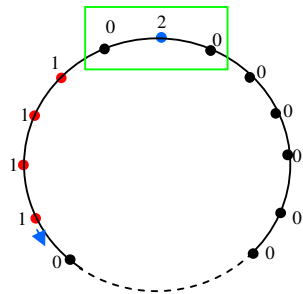
$$\sum_{k=1}^n \frac{k.(k+1)}{2} = \frac{1}{2} \sum_{k=1}^n (k^2 + k) = \frac{1}{2} \left(\frac{n.(n+1)(2n+1)}{6} + \frac{n.(n+1)}{2} \right) = \frac{n.(n+1).(n+2)}{6}$$



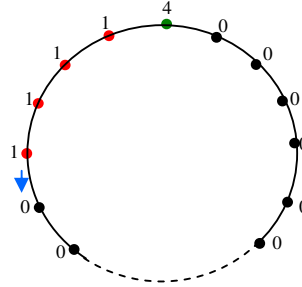
(121) → 3 ile gösterirsek



$F(1,2,n)$ tane durum vardır.



(020) → 4 ile gösterirsek



$F(1,4,n-2)$ durum oluşur.

Oluşacak toplam durum sayısı:

$$F(1,4,n) = \frac{n.(n+1).(n+2)}{6} + F(1,2,n) + F(1,4,n-2) \text{ ile ifade edebiliriz.}$$